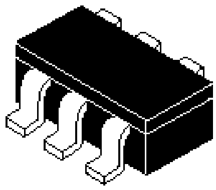
SMA428A

High Gain, Low Noise Amplifier

PRELIMINARY DATA

- HIGH GAIN Gp = 21 dB at 1.85 GHz
- LOW NOISE FIGURE NF = 1.3 dB at 1.85 GHz
- LOW CURRENT CONSUMPTION 5.9 mA
- OPEN COLLECTOR OUTPUT
- TYPICAL SUPPLY VOLTAGE: 2.4-3 V
- GAIN-STEP-MODE (36dB)
- ULTRA MINIATURE SOT323-6L PACKAGE (LEAD FREE)



SOT323-6L (SC70)

ORDER CODE	BRANDING
SMA428ATR	TBD

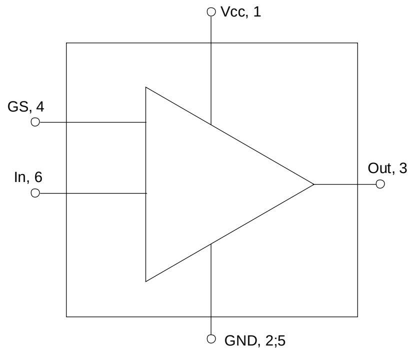
APPLICATIONS

- LNA FOR CELLULAR MARKET (ideal for GSM900, DCS1800 and PCS1900).
- LNA FOR GPS APPLICATIONS

DESCRIPTION

High gain and low noise figures make the SMA428A an ideal solution for Low Noise Amplifiers and receiver front end stages up to 2.5 GHz. SMA428A's typical supply voltage range is 2.4 to 3.3 volts. It shows excellent performances in terms of NF, Gain and current consumption, using just 3 external matching components. Applying supply voltage to the GS pin and grounding Vcc pin, it provides a reduced gain step of 35 dB. SMA428A is housed in ultra miniature SOT323-6L package(LEAD FREE), the relative dimensions are 1.15mmx1.8mm with 0.8mm thickness.

BLOCK DIAGRAM



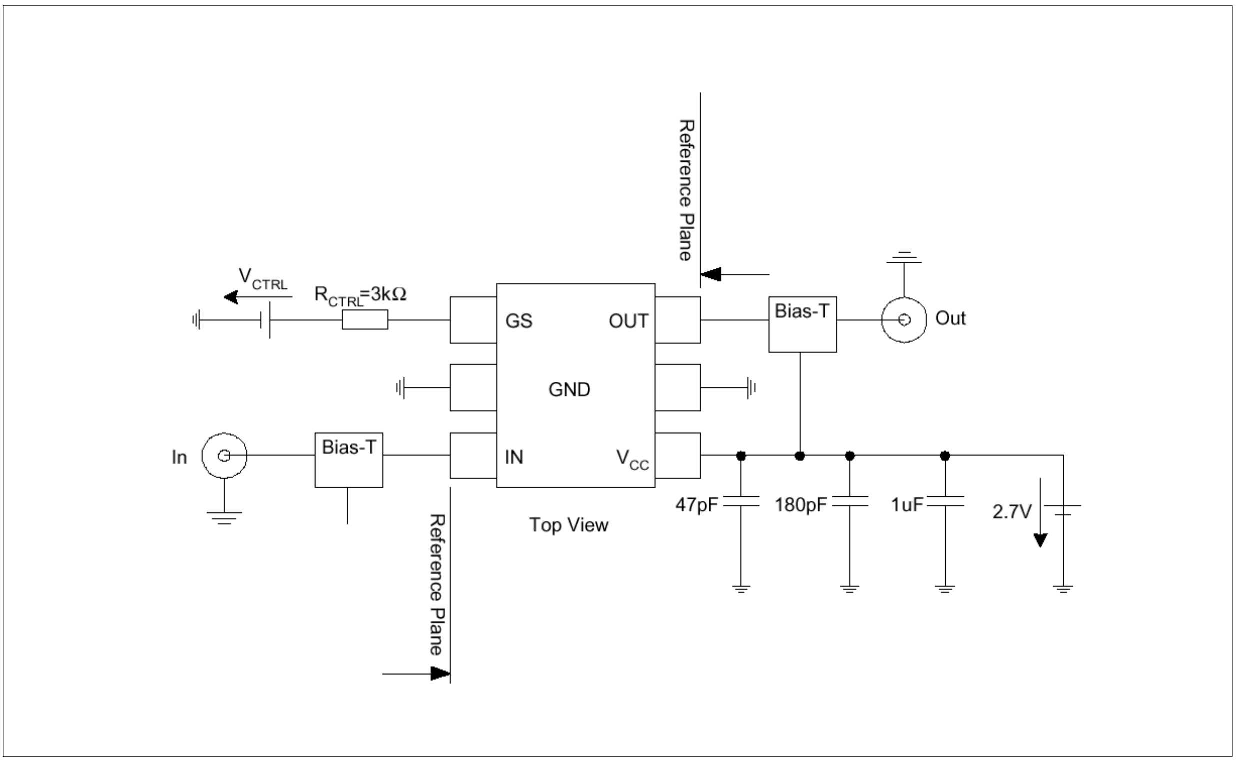
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{cc}	Device voltage	4	V
V_{out}	Voltage at pin Out	4	V
V_{GS}	Voltage at pin GS	3.5	V
I_{tot}	Total Device Current	12	mA
I_{in}	Current into pin In	0.5	mA
P_{tot}	Total dissipation, $T_s < 125$ ^oC	60	mW
P_{IN}	Input Power	8	dBm
T_{op}	Operating temperature	-40 to +85	^oC
T_{stg}	Storage temperature	-65 to +150	^oC
T_j	Max. operating junction temperature	150	^oC

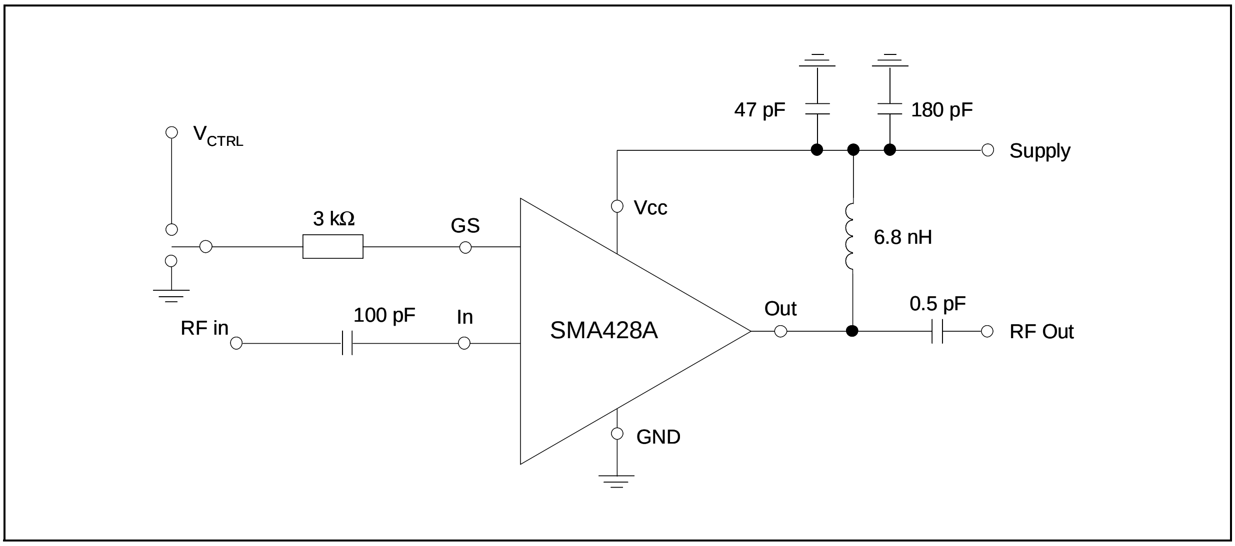
THERMAL RESISTANCE

R_{thjs}	Thermal Resistance Junction soldering point	200	$^oC/W$

Test Circuit (Fig. 1)



Typical application circuit (Fig. 2)

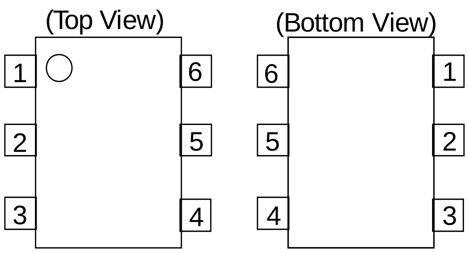


ELECTRICAL CHARACTERISTICS

(Ta = +25°C, V_{CC} = 2.7V, tested in circuit shown in fig.1, unless otherwise specified)

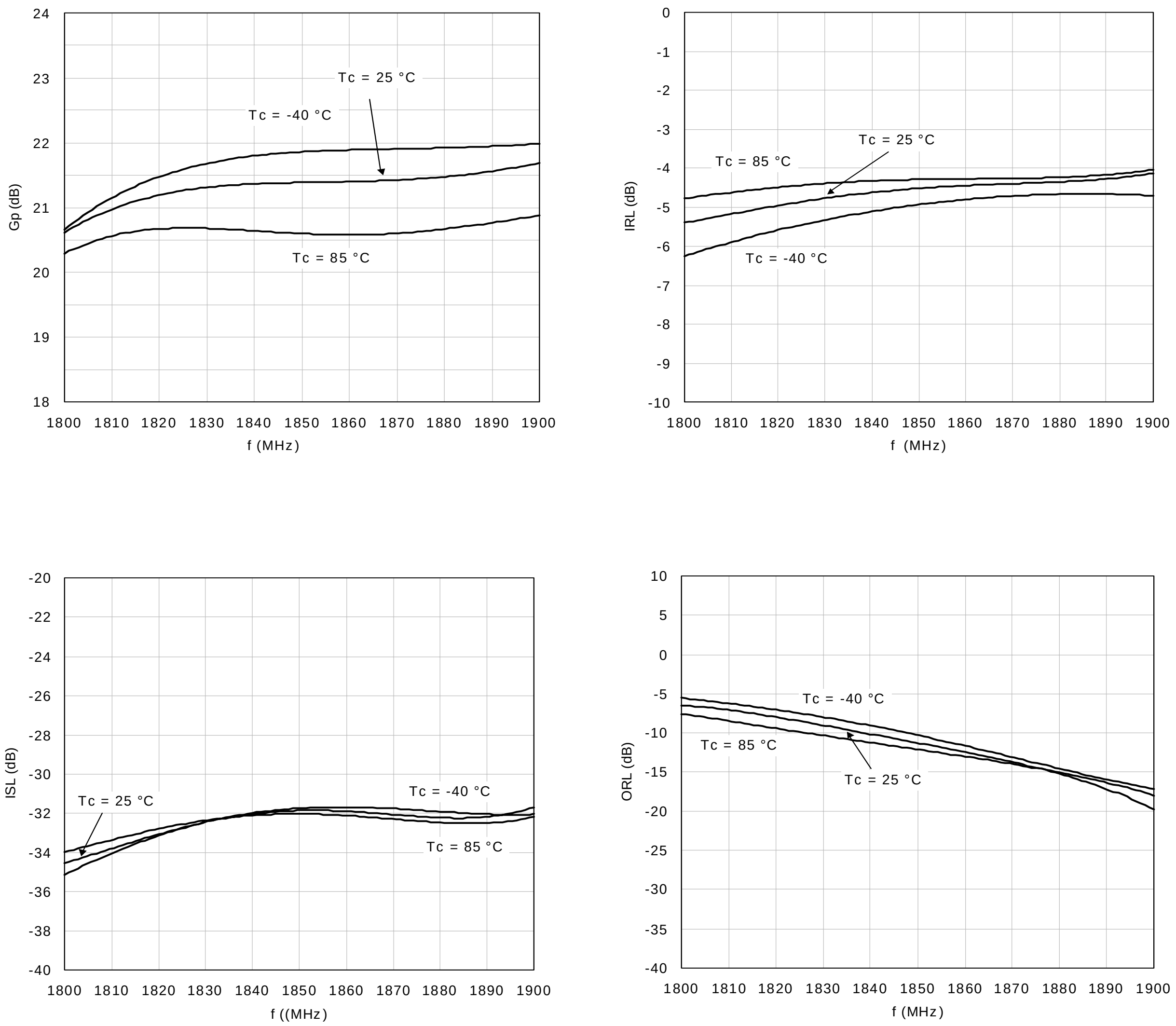
Symbol	Parameters	Test Conditions	Min	Typ	Max	Unit
f	Frequency Range			1850		MHz
I_{tot}	Total device current			5.9	7.5	mA
Gp	Power Gain		18	21		dB
NF	Noise Figure (Zs = 50 Ω)			1.3	1.7	dB
P_{-1dB}	Input Power at 1 dB Gain Compression		-23			dBm
IIP3	Input third order intercept point		-13			dBm
L_{GS}	Insertion Loss in Gain-Step-Mode	Vcc = 0.0 V, V_{CTRL} = 2.7 V, R_{CTRL} = 3 kΩ	11		18	dB
I_{CTR}	Current consumption in Gain-Step-Mode	Vcc = 0.0 V, V_{CTRL} = 2.7 V, R_{CTRL} = 3 kΩ		0.33		mA

PIN CONNECTION



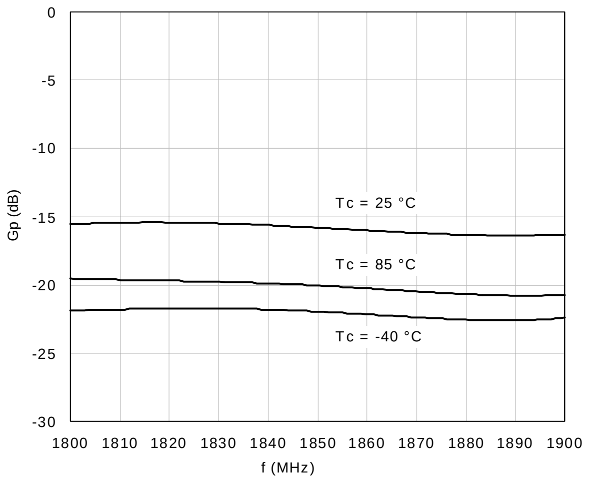
Pin No.	Pin Name
1	VCC
2	GND
3	OUTPUT
4	GS
5	GND
6	INPUT

S-Parameters ($Z_L = Z_S = 50\ \Omega$, $V_{CC} = 2.7V$, measured in application circuit shown in fig.2)

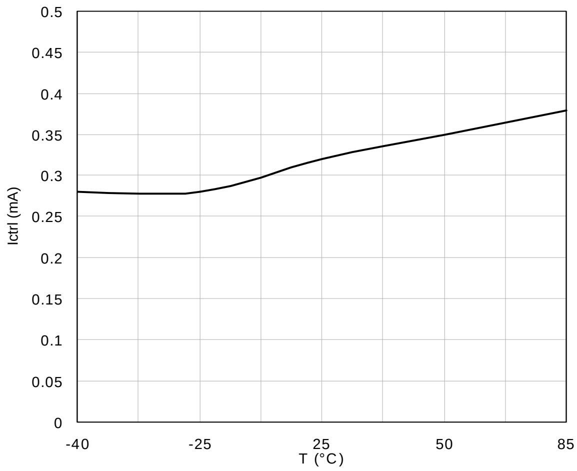


TYPICAL PERFORMANCE

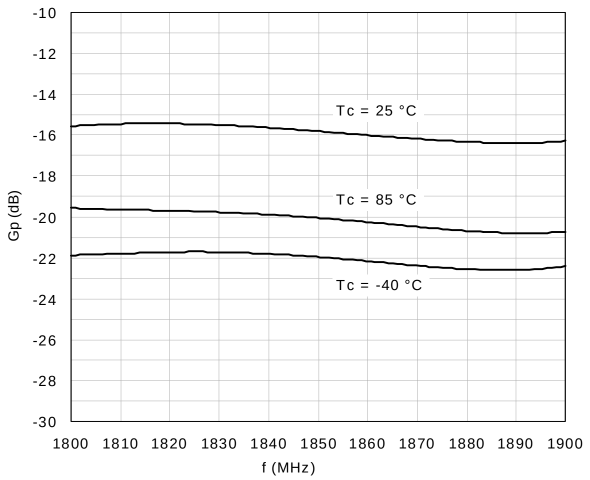
Supply Current Vs Temperature



Control Current Vs Temperature

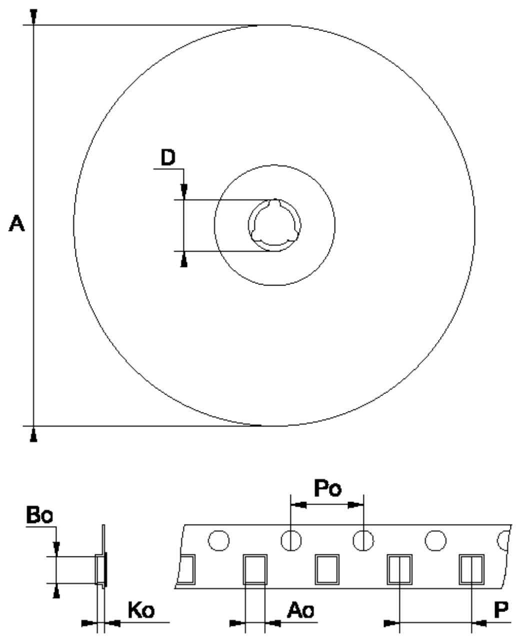


OFF-Gain *(Vcc = 0V, Vctrl = 2.7V, Rctrl = 3Kohm)*

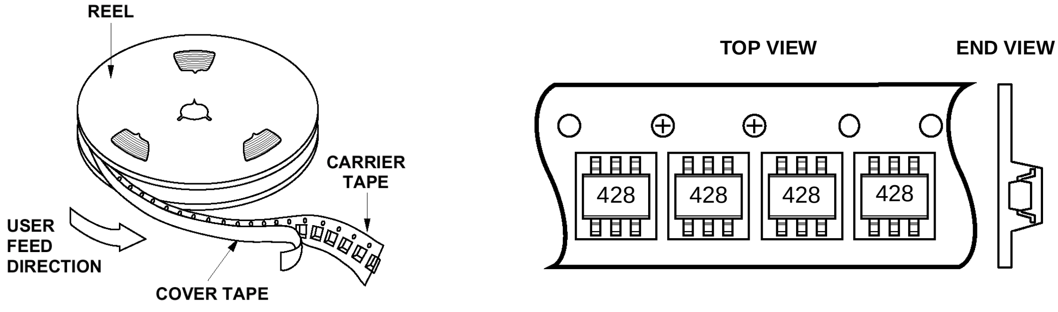


TAPE & REEL DIMENSIONS

	mm		
	MIN.	TYP.	MAX
A	178.5	179	179.5
C	12.8	13.0	13.5
D	20.2		
N	54.5	55	55.5
T			14.4
Ao		2.25	
Bo		2.7	
Ko		1.2	
Po	3.8 (cumulative 10 Po)	4.0	4.2 (cumulative 10 Po)
P		4.0	

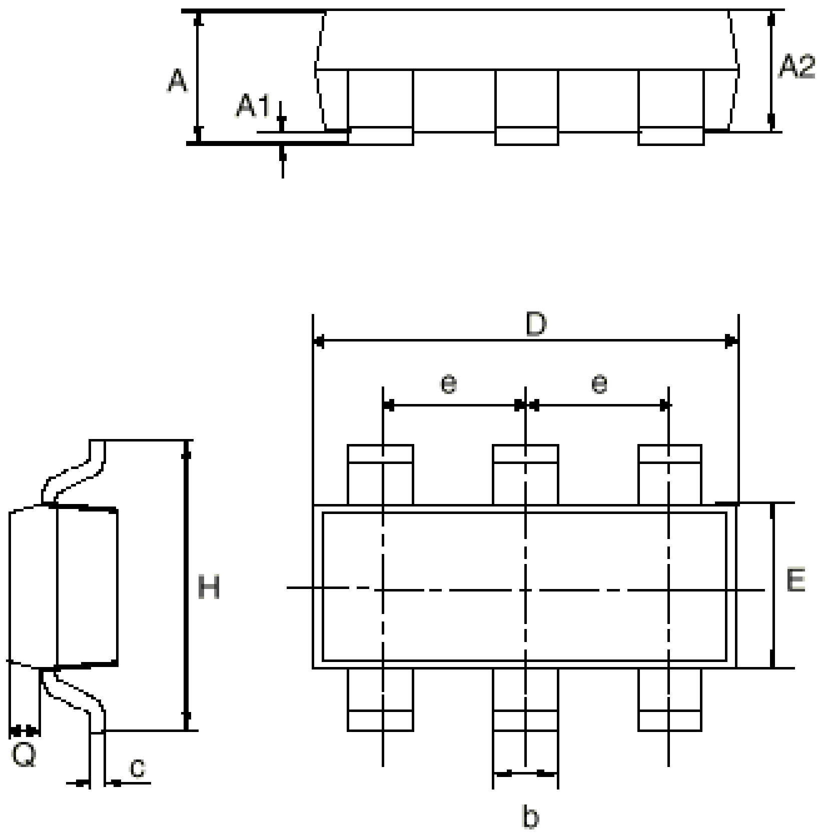


DEVICE ORIENTATION



SOT323-6L MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A	0.8		1.1	0.031		0.043
A1	0		0.1	0		0.004
A2	0.8		1	0.0031		0.039
b	0.15		0.3	0.006		0.012
c	0.1		0.18	0.004		0.007
D	1.8		2.2	0.071		0.088
E	1.15		1.35	0.045		0.59
e		0.65			0.025	
H	1.8		2.4	0.071		0.094
Q	0.1		0.4	0.004		0.016



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